

REMARKS

In response to the Office Action mailed October 3, 2003, Applicants respectfully request reconsideration. To further the prosecution of this Application, Applicants submit the following remarks, have canceled claims, have amended claims and have added new claims. The claims as now presented are believed to be in allowable condition.

Claims 1-30 were pending in this Application. By this Amendment, claims 16-30 have been canceled. Applicants reserve the right to prosecute such claims and similar claims in one or more related Applications. Claims 31-42 have been added. Accordingly, claims 1-15 and 31-42 are now pending in this Application. Claims 1, 12, and 37 are independent claims.

Request to Correct Application Information

Applicants wish to point out a few informalities in the Application information database, as listed on the cover sheet of the Office Action. In particular, the firm name of Applicants' Representative is incorrect. The correct firm name of Applicants' Representative is "Chapin & Huang, LLC". Additionally, the docket number is incorrect. The correct docket number is "EMC02-34(DG-668)".

Applicants have provided a copy of the cover sheet of the Office Action with corrections in red ink. Entrance of these corrections in the Application information database is respectfully requested.

Objection to the Drawings

The Drawings were objected to under MPEP §608.02(g). In particular, the Office Action contends that Fig. 1 "should be designated with a legend such as --Prior Art-- because only that which is old is illustrated." To further the prosecution of this Application, Applicants have submitted a proposed change to Fig. 1 of the Drawings. Upon acceptance of this proposed change and in due course, Applicants will provide a substitute Formal Drawing for Fig. 1.

Rejection under §112, Second Paragraph

Claims 9 and 10 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite due to minor informalities. Applicants have made clarifying amendments to the claims 9 and 10 to cure these informalities. Accordingly, the rejection of claims 9 and 10 under 35 U.S.C. §112, second paragraph, should be withdrawn.

Rejections under §102 and §103

Claims 1-2 and 12-14 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,370,605 (Chong, Jr.). Claims 3-8 and 10-11 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chong in view of Applicants' admitted prior art (AAPA). Claim 9 was rejected under 35 U.S.C. §103(a) as being unpatentable over Chong in view of Applicants' admitted prior art, and in further view of U.S. Patent No. 6,148,421 (Hoese). Claim 15 was rejected under 35 U.S.C. §103(a) as being unpatentable over Chong in view of U.S. Patent No. 5,938,736 (Muller).

Applicants respectfully traverse each of these rejections and request reconsideration. The claims are in allowable condition because they patentably distinguish over the cited prior art.

Chong discloses a computer system having a switch and a storage controller coupled to the switch (column 3, lines 16-25). The switch routes data directly between a host computer and one or more storage devices such that the data does not pass through the storage controller/control module (column 3, lines 25-30). In particular, with reference to Fig. 5 of Chong, a computer system 50 includes basic modules of Figs. 3A-3E and 4A of Chong. For example, with reference to Fig. 3A, a computer system 21 has a storage controller 26 which includes a control module 24 and a switch 22 (column 6, lines 37-40). Control information (including command and status signals) flows over a control path defined by links 271, 272 and 273 (column 6, lines 40-42 and Fig. 3A). On the

other hand, data flows directly between a host computer 12 and a storage device 18 through the switch 22 and over a data path defined by links 251 and 252 (column 6, lines 43-46 and Fig. 3A). As shown in each of Figs. 3A through 3E of Chong, data ***always*** does not pass through the control module 24.

Applicants' admitted prior art (AAPA) discloses a "protocol stack" of five network levels of fibrechannel (page 5, lines 15-17 of the Specification). In particular, Fig. 3A shows five levels, FC-0, FC-1, FC-2, FC-3 and FC-4 (page 5, line 21 of the Specification). The FC-2 functional level deals with transferring information and is concerned with its content, proper arrival of content or detection of missing information or information errors; this level thus defines frame fields including frame header field layout and is utilized in embodiments of the present invention (page 6, lines 5-9 of the Specification).

Hoese discloses data transfer from an initiator to a target (column 4, line 67 through column 5, line 2). Before the data transfer takes place, the target must respond with a Transfer-Ready, which is an indication from the target to send data and how much data (column 5, lines 2-5). The Transfer-Ready goes back to the initiator so the initiator acts on that Transfer_Ready and begins to send data (column 5, lines 6-25).

Muller discloses a multi-layer distributed network element (MLDNE) 101 containing a number of subsystems 110 (column 3, lines 30-33). Each subsystem 110 includes a switch element 100 coupled to a forwarding and filtering database 140, also referred to as a forwarding database (column 3, lines 34-36). Search keys are formed based upon an encoding of a header class and selected information from an incoming packet's header (column 7, lines 33-36). Masks may be provided on a per header class basis in local switch element 100 memory to facilitate the header field selection (column 7, lines 36-42).

Claims 1-11

Claim 1 is directed to a storage system for storing data for a host computer. The system includes a plurality of disk drives for storing and supplying

the data, and a switch having a plurality of input and output ports. The switch is connected between the plurality of disk drives and the host computer for at least connecting an input port on which the data was received to an output port. The system further includes an aggregator connected to the switch for at least managing operation of the plurality of disk drives. The system further includes operation coordinating logic operatively coupled to coordinate operation of the plurality of disk drives, the switch, and the aggregator in a manor to control flow of certain data between the host computer and the plurality of disk drives to be through the switch and not through the aggregator and in a manner which does not change the operation of the host computer.

The cited prior art does not teach or suggest, either alone or in combination, a system having operation coordinating logic operatively coupled to coordinate operation of a plurality of disk drives, a switch, and an aggregator in a manor to control flow of certain data between a host computer and the plurality of disk drives to be through the switch and not through the aggregator and in a manner which does not change the operation of the host computer, as recited in claim 1. Rather, Chong discloses a computer system having storage controller and a switch, where the switch routes data directly between a host computer and one or more storage devices such that the data ***always*** does not pass through the control module of the storage controller (see column 3, lines 25-30 and Figs. 3A through 3E of Chong). Accordingly, in Chong, there is no operation coordinating logic which coordinates operation to control flow of certain data between a host computer and disk drives, as recited in claim 1. In particular, if one were to argue that Chong's switch 22 is the switch of claim 1, and that Chong's control module 24 is the aggregator of claim 1, there is no additional logic in Chong that coordinates operation to control flow of certain data between a host computer and disk drives to be through the switch and not through the aggregator, as required by claim 1, since data ***always*** does not pass through the aggregator (i.e., Chong's control module 24).

Applicants further submit that it is unclear why one would want to modify Chong's computer system or how one could modify Chong's computer system to obtain such operation coordinating logic since Chong's data ***always*** does not pass through the storage controller (see column 3, lines 25-30 of Chong). Applicants' admitted prior art, which was cited for disclosing the FC-2 functional level, does not teach or suggest how one could modify Chong's computer system in that manner. Additionally, Hoese, which was cited for disclosing a target that sends a Transfer-Ready back to an initiator, does not teach or suggest how one could modify Chong's computer system in that manner. Furthermore, Muller, which was cited for disclosing masks provided on a per header class basis, does not teach or suggest how one could modify Chong's computer system in that manner.

In contrast to Chong, the system of claim 1 has operation coordinating logic operatively coupled to coordinate operation of a plurality of disk drives, a switch, and an aggregator in a manner to control flow of certain data between the host computer and the plurality of disk drives to be through the switch and not through the aggregator and in a manner which does not change the operation of the host computer. This enables the system to "decide" whether it would be in the system's best interest if data from the host computer proceed through the aggregator or not proceed through the aggregator as explained on page 13, lines 5-10 of the Specification. For example, there are instances in which it is preferable to have data from the host computer pass through the aggregator such as to avoid a security issue as explained on page 4, lines 19-21 of the Specification.

For the reasons stated above, claim 1 patentably distinguishes over the cited prior art, and the rejection of claim 1 under 35 U.S.C. §102(e) should be withdrawn. Accordingly, claim 1 is in allowable condition.

Because claims 2-11 depend from and further limit claim 1, claims 2-11 are in allowable condition for at least the same reasons.

Claims 12-15

Claim 12 is directed to a computer data storage system wherein data is grouped in frames. The computer data storage system includes a plurality of disk drives for storing and retrieving the data, and an aggregator for managing operation of the plurality of disk drives. Each of the frames has a header containing binary fields designating parameters including a destination ID. The header is associated with that portion of the data contained within that frame. The computer data storage system further includes a switch connected between the computer, the disk drives, and the aggregator for both controllably selecting certain ones of the frames and flowing the portion of the data grouped in the certain ones and having the aggregator as the destination ID directly between the computer and the plurality of disk drives, whereby data transfer through the aggregator is avoided for the certain ones of the frames.

The cited references do not teach or suggest, either along or in combination, a computer data storage system having a switch connected between a computer, disk drives and an aggregator for both controllably selecting certain frames and flowing data grouped in those certain frames and having the aggregator as a destination ID directly between the computer and the disk drives, whereby data transfer through the aggregator is avoided for the certain frames, as recited in claim 12. Rather, as mentioned above in connection with claim 1, Chong discloses a computer system having storage controller and a switch, where the switch routes data directly between a host computer and one or more storage devices such that the data ***always*** does not pass through the control module of the storage controller. Moreover, none of the other cited references teach or suggest how one could modify or why one would want to modify the Chong computer system along the lines of claim 12. Thus, claim 12 patentably distinguishes over the cited prior art for at least the same reasons as claim 1, and the rejection of claim 12 under 35 U.S.C. §102(e) should be withdrawn. Accordingly, claim 12 is in allowable condition.

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Because claims 13-15 depend from and further limit claim 12, claims 13-15 are in allowable condition for at least the same reasons.

Newly Added Claims

Claims 31-42 have been added and are believed to be in allowable condition. Claims 31-33 depend from claim 1. Claims 34-36 depend from claim 12. Claim 37 is an independent claim, and claims 38-42 depend from claim 37. Support for claims 31-42 is provided within the Specification, for example, on page 13, line 3 through page 15, line 18 and Figs. 4 and 8. No new matter has been added.

Conclusion

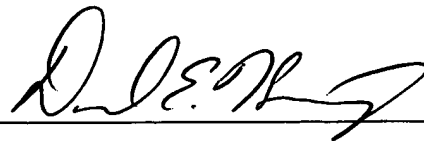
In view of the foregoing remarks, this Application should be in condition for allowance. A Notice to this effect is respectfully requested. If the Examiner believes, after this Amendment, that the Application is not in condition for allowance, the Examiner is respectfully requested to call the Applicants' Representative at the number below.

Applicants hereby petition for any extension of time which is required to maintain the pendency of this case. If there is a fee occasioned by this Amendment, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50-0901.

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If the enclosed papers or fees are considered incomplete, the Patent Office is respectfully requested to contact the undersigned collect at (508) 366-9600, in Westborough, Massachusetts.

Respectfully submitted,



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